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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/705,367	11/03/2000	Wade J. Doll	901115.434	7548

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EXAMINER

LEO, LEONARD R

ART UNIT	PAPER NUMBER
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3753

DATE MAILED: 10/20/2003

15

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/705,367

Applicant(s)

DOLL, WADE J.

Examiner

Leonard R. Leo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 07 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-4,6-22,43-45,47 and 48 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4,6-8,10-13,15,17-22,43,44,47 and 48 is/are rejected.
- 7) ☒ Claim(s) 9,14,16 and 45 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 07 August 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other:

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### DETAILED ACTION

The amendment filed August 7, 2003 has been entered. Claims 1-4, 6-22, 43-45 and 47-48 are pending.

#### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Opitz et al (column 3, lines 3-13). The recitation of “configured to direct fluid entering the chamber to impinge against the second surface of the plate” is not considered to be a positive limitation and is functional. See MPEP 2114. Furthermore, it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987). In this instance, merely labeling a fluid aperture as an “inlet” or “outlet” does not impose any patentable limitation.

#### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 2-3, 10-12, 15 and 47-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Opitz et al in view of Randell.

Opitz et al discloses all the claimed limitations except two concentric arrays of fins.

Randell discloses a heat exchanger (Figures 4-5) comprising a heat conducting surface 14 (i.e. top) and a plurality of radial fin arrays 9-13 arranged in a spiral pattern for the purpose of improving heat exchange efficiency.

Since Opitz et al and Randell are both from the same field of endeavor and/or analogous art, the purpose disclosed by Randell would have been recognized in the pertinent art of Opitz et al.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Opitz et al a plurality of radial fin arrays arranged in a spiral pattern for the purpose of improving heat exchange efficiency as recognized by Randell.

Regarding claims 10-12 and 47, Randell (Figure 5) discloses inner fin arrays (9-10) spaced from outer fin array (12).

Regarding claim 48, the fins of Randell (Figure 4) extends from the overhead wall 14 (i.e. top) to heat conducting plate 14 (i.e. bottom).

Claims 1-4, 7-8, 10-13, 17-18, 20-21, 43-44 and 47-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Little in view of Randell.

Little discloses all the claimed limitations except radial fins forming radial channels.

Randell discloses a heat exchanger (Figures 4-5) comprising a heat conducting surface 14 (i.e. top) and a plurality of radial fin arrays 9-13 arranged in a spiral pattern for the purpose of minimizing pressure drop.

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Since Little and Randell are both from the same field of endeavor and/or analogous art, the purpose disclosed by Randell would have been recognized in the pertinent art of Little.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Little radial fin arrays arranged in a spiral pattern for the purpose of minimizing pressure drop as recognized by Randell.

Regarding claims 10-12 and 47, Randell (Figure 5) discloses inner fin arrays (9-10) spaced from outer fin array (12).

Regarding claims 7, 13 and 43-44, the radial channels 38 of Little do not extend to the annular channel 40. Therefore, in the modification with Randell, the radial fins defining the radial channels would extend to the annular channel 40 of Little.

Regarding claim 48, the fins of Randell (Figure 4) extends from the overhead wall 14 (i.e. top) to heat conducting plate 14 (i.e. bottom).

Claims 1-4, 6-8 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Little in view of Turner.

The device of Little lacks radial fins forming radial channels.

Turner discloses a heat exchanger comprising a chamber defined by overhead wall 10 having a central inlet 15 and unlabelled peripheral outlet; a fin plate 20 having a plurality of curved fins 22-27 arranged in a radial spiral pattern for the purpose of minimizing pressure drop.

Since Little and Turner are both from the same field of endeavor and/or analogous art, the purpose disclosed by Turner would have been recognized in the pertinent art of Little.

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It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Little curved fins arranged in a radial spiral pattern for the purpose of minimizing pressure drop as recognized by Turner.

Regarding claim 7, the radial channels 38 of Little do not extend to the annular channel 40. Therefore, in the modification with Randell, the radial fins defining the radial channels would extend to the annular channel 40 of Little.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Opitz et al in view of Randell as applied to claims 2-3, 10-12, 15 and 47-48 above, and further in view of Turner, as applied to claims 1-4, 6-8 and 17 above.

Claims 6, 19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Little in view of Randell as applied to claims 1-4, 7-8, 10-13, 17-18, 20-21, 43-44 and 47-48 above, and further in view of Turner, as applied to claims 1-4, 6-8 and 17 above.

Regarding claim 22, Turner discloses inlet and outlet threaded fittings 13 and 14, respectively.

***Allowable Subject Matter***

Claims 9, 14, 16 and 45 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

The claim objections are withdrawn.

In response to applicant's remarks with respect to MPEP 2114, there is no issue of indefiniteness under 35 USC 112, second paragraph. The functional language in the claim is just

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that: functional. It is not a **structural** limitation. As noted in the instant and a previous Office action, *Ex parte Masham* clearly states, “the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations.” There is no claimed structural difference between the “inlet” and “outlet” aperture. The only difference is functional. The question applicant must ask himself is whether infringement would be made on the claimed invention, if one were to employ the claimed device in reverse. For example, in a heat pump system for heating and cooling comprises an indoor heat exchanger for cooling in the summer and heating in the winter. In the respective cooling and heating modes, the flow direction is reversed through the indoor heat exchanger. Thus, the “inlet” and “outlet” are merely relative terms depending upon the mode of operation.

Applicant’s remarks with respect to Little are not commensurate in scope with the claims. The claims do not recite any relationship between the “semiconductor chip” and “heat exchanger assembly.” The claims do not recite the relative sizes, the relative positioning thereon, materials, working fluid, etc. Clearly, the prior art discloses specific objects and structures to perform desired functions. However, the instant invention only claims a structured device to perform a general task: heat exchange. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicant’s understanding of Little is in a vacuum. Little does not “reject the use of heat-conductive fins.” Low thermal conductivity is a consideration when using nitrogen. Thermal expansion is a concern when matching the coefficient of the semiconductor chip. Cooling is

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centralized in a small area because the semiconductor chip is located centrally in a small area. In response to applicant's argument that Little and Randell are nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, both references are heat exchangers concerned with transferring heat to a central location by providing an inflow of fluid to the central location with radial guiding fins/vanes controlling the flow of fluid radially away therefrom. The direction of the heat flow is irrelevant. Anyone having ordinary skill in the art of heat exchanger design recognizes heat transfer efficiency and pressure drop are the main concerns. While the increased pressure drop increases the heat transfer efficiency, this comes at a cost of pumping power. Thus, to employ radial fin arrays arranged in a spiral pattern for the purpose of minimizing pressure drop as taught by Randell would require only routine skill in the art.

Regarding applicant's remarks with respect to Turner, Turner intends the entire surface to be the heat exchanger, whereas, Little requires only the portion where the semiconductor chip is located to be cooled. Thus, the centrally located fins in both Little and Turner are similar structure. To employ radial fin arrays arranged in a spiral pattern for the purpose of minimizing pressure drop as taught by Turner would require only routine skill in the art.

Regarding claim 12, an examination of the claim reveals that "two adjacent arrays of fins" are not recited.



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Regarding claims 18 and 43, in the combination of references, Randell discloses "two concentric circular arrays of fins."

No further comments are deemed necessary at this time.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

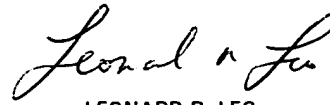
Any inquiry of a general nature, relating to the status of this application or clerical nature (i.e. missing or incomplete references, missing or incomplete Office actions or forms) should be directed to the Technology Center 3700 Customer Service whose telephone number is (703) 306-5648. Status of the application may also be obtained from the Internet: <http://pair.uspto.gov/cgi-bin/final/home.pl>

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Any inquiry concerning this Office action should be directed to Leonard R. Leo whose telephone number is (703) 308-2611.

A handwritten signature in cursive script, reading "Leonard R. Leo".

LEONARD R. LEO  
PRIMARY EXAMINER  
ART UNIT 3753

October 14, 2003